



AreaWide Suppression of Fire Ants (AWSFA)

Summer 2003

Gainesville, FL



This is the Summer 2003 issue of the Areawide project update. Our project is now in full swing in all states, and fire ant populations have been maintained under control in all demonstration sites. Two minor problems are related to the lack of documented establishment of the fire ant disease *Thelohania solenopsae* in Mississippi and the phorid flies in Oklahoma. New releases of these biocontrol agents have been conducted at these states, and fire ant populations are being monitored so the need for new releases can be determined as soon as possible.

New Logo

A new project logo has been created, resulting from a partnership between Jane Medley from the Univ. of Florida, and the project coordinator. This logo displays a cartoon representing the important biological control elements that are integrated into the control strategy used in the areawide project. Hovering over a obviously unlucky fire ant is a decapitating fly with a very menacing ovipositor, while *Thelohania solenopsae* spores explode out of the ant's abdomen. Although the new logo clearly demonstrates a certain artist liberty in depicting the two biocontrol agents, and the fire ant host, it also proclaims our determination to defeat the imported fire ants through the use of self-sustaining biological control.



Decapitating Flies Established and Expanding in Southeast United States

The fire ant parasitic flies known as “decapitating flies” were first released successfully in the US in 1997 by USDA-ARS, CMAVE scientists. After initial releases around Gainesville, FL, mass-production of flies allowed release of these fire ant biocontrol agents in many areas in the US. Populations of the flies have been established in different states, and population expansion has been documented in several locations. The population in north-central FL has been expanding at a rate of approximately 10-12 miles per year. This population occupies an area from coast to coast in FL, and into southern GA. Expanding populations have been detected in SC, AL, MS, LA and TX. A mass-production facility utilizing USDA-ARS technology, FL Division of Plant Industry facilities and USDA-APHIS financial support has been producing large numbers of the *Pseudacteon tricuspis* flies, which are then made available for release in SE states. A different

decapitating fly, *P. curvatus*, is produced at a USDA-ARS facility in Stoneville MS, for release in the northern range of fire ants, where the black and hybrid fire ants predominate over the more southern red



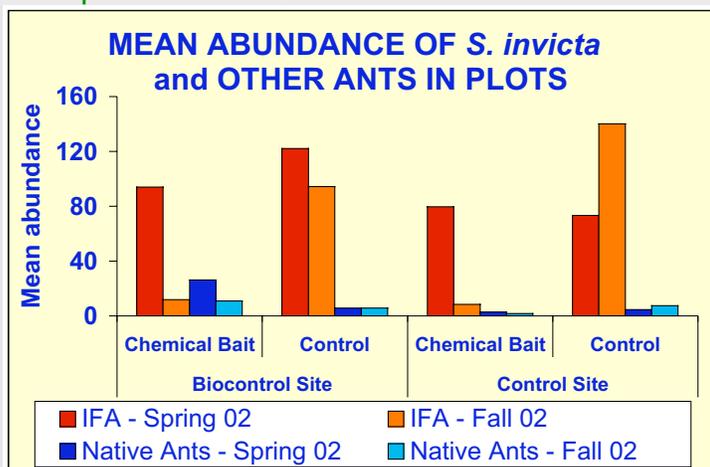
Pseudacteon curvatus collected in South Carolina areawide site by William Davis

imported fire ant. A new biotype of *P. curvatus* has been released and field generation has been detected in Florida and South Carolina demonstration sites. This biotype differs from the *P. curvatus* biotype produced at the USDA-ARS facility in Stoneville MS, and is more adapted to attacking the red imported fire ant *S. invicta*, and better adjusted to colder temperatures than *P. tricuspis*.

Environmental Assessment – Florida sites

An environmental assessment is conducted at all the AWSFA demonstration sites. This assessment consists of pitfall traps placed in 50 sample plots within each of the control and treatment sites. These traps are buried in the soil, and left for 2-3 days, during which crawling insects and other arthropods are collected. The collected assembly of arthropods is separated, counted and classified into different species (ants only), families, orders, classes, etc. Because fire ants have a damaging effect on much of the arthropod fauna, environmental improvements resulting from decreases in the fire ant population can be directly measured by assessing the size and diversity of other arthropod and especially ant populations.

Initial results from the environmental assessment in FL demonstration sites show a decrease in imported fire ant population with corresponding increase in the beneficial native ant population. These results demonstrate that the integrated control approach using chemical baits and biological control agents can be advantageous in tipping the balance in favor of native fauna against the imported fire ants.



New Areawide Brochure on Biocontrol Agents

A new brochure prepared by Phil Koehler and other personnel at the Univ. of Florida describes the biological control agents being used in the integrated approach implemented in the areawide fire ant suppression project. This new, full color 4-page publication describes the benefits of biological control of fire ants and gives details and very descriptive figures on the biology of the biocontrol agents. A file in pdf format of this brochure can be downloaded from:

<http://cmave.usda.ufl.edu/~rpereira/awsfa/brochure.pdf>

Areawide suppression of Fire Ants using baits and Biological Control

Objectives

1. Release and spread natural enemies for fire ants – decapitating flies and *Thebavian disease* of queens.
2. Integrate use of baits and biological control to provide 80% sustained, areawide reduction of fire ants.
3. Save at least \$4 billion a year in cost of fire ant control and damage for agricultural producers, businesses, homeowners, government and military.
4. Reduce reliance on repeated applications of insecticide for fire ant control.
5. Restore ecological balance in the natural environment.

Ant decapitated by phorid fly | Healthy queen | Thebavian disease of queen

USDA Agricultural Research Service
AREAWIDE SUPPRESSION OF FIRE ANTS

Areawide Project USDA Crew Visits State Cooperator Sites

Roberto Pereira, David Milne and Rebecca Blair, all from the Center for Medical, Agricultural and Veterinary Entomology (CMAVE), Gainesville, FL, traveled to South Carolina (Aug. 4-6), Oklahoma (Aug. 11-13) and Texas (Aug 13-15) to visit the demonstration field sites where the project on areawide suppression of fire ants has been implemented. The purpose of the visits was to help local researchers detect the presence of the decapitating flies released at the sites. In SC, Tim Davis and the USDA researchers detected *P. tricuspis* in the Fairfield Co. site but failed to detect the presence of *P. curvatus*. Later, this fly biotype, released in SC in late June 2003, was detected at the site by Tim Davis's son William. In TX, Charles Barr and Alejandro Calixto demonstrated the use of a modified cattle prod for the detection of decapitating flies. The device stimulates the fire ants with a powerful electrical charge and causes the release of ant alarm pheromones, which attracts decapitating flies. Decapitating flies were detected at the release sites and at locations 0.5 miles away.